$\mathbb{W}([M_1 \mid x \leftarrow M_2]) \overset{def}{=}$ [illegible]

~~$x : 0$~~ WTF

$\mathbb{W}([\,]) \overset{def}{=} \emptyset \rhd [\,]_t : [t]$

$\mathbb{W}(U :: V) \overset{def}{=} S(\Gamma_U \cup \Gamma_V) \rhd S(M_U :: M_V) : S(\sigma_V)$

$\mathbb{W}(U) = \Gamma_U \rhd M_U : \sigma_u$

$\mathbb{W}(V) = \Gamma_V \rhd M_V : \sigma_V$

$S = MGU\{\sigma_V \doteq [\sigma_u]\} \cup \{\tau_x \doteq \tau'_x : x : \tau_x \in \Gamma_U,\ x : \tau'_x \in \Gamma_V\}$

$\mathbb{W}([U \mid x \leftarrow V]) \overset{def}{=} S(\Gamma'_U \cup \Gamma_V) \rhd S([M_U \mid x \leftarrow M_V]) : S([\sigma_U])$

$\Gamma'_U = \Gamma_U \ominus x$

$\mathbb{W}(U) = \Gamma_U \rhd M_U : \sigma_U$

$\mathbb{W}(V) = \Gamma_V \rhd M_V : \sigma_V$

$S = MGU\{\sigma_V \doteq [t_x]\} \cup$ que no se peguen (Γ'_U, Γ_V)

$t_x = \begin{cases} \alpha & \text{si } x : \alpha \in \Gamma_U \\ t & \text{sino} \end{cases}$

b. $[(\lambda y . y x) \mid x \leftarrow 0 :: z :: [\,]]$

(2) $(\lambda y . y x)$

(1) $y x$ $\quad S = \{s_1 \leftarrow s_2 \to s_5\}$

y: $\{y : s_1\} \rhd y : s_1$

x: $\{x : s_2\} \rhd x : s_2$

(3) $\{z : Nat\} \rhd 0 :: z :: [\,]_{Nat} : [Nat]$ $\quad S = \{s_3 \leftarrow Nat\}$

$0 :: z :: [\,]$

0: $\emptyset \rhd 0 : Nat$

$z :: [\,]$: $\{z : s_3\} \rhd z :: [\,]_{s_3} : [s_3]$ $\quad S = \{s_4 \leftarrow s_3\}$

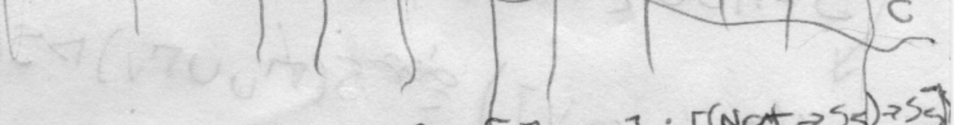
z: $\{z : s_3\} \rhd z : s_3$

$[\,]$: $\emptyset \rhd [\,]_{s_4} : [s_4]$

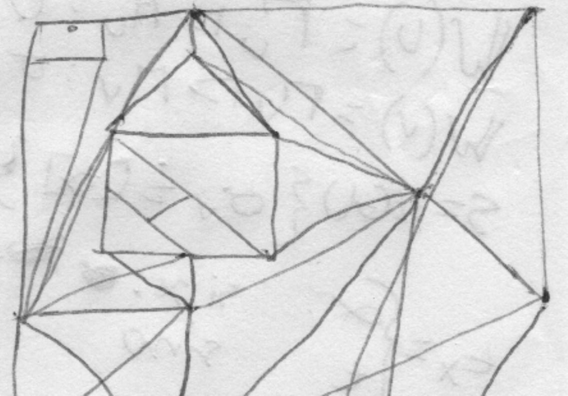
$\rhd\ y\, x : s_5$

(1): $\{y : s_2 \to s_5,\ x : s_2\} \rhd y\, x : s_5$

(2): $\{x : s_2\} \rhd \lambda y : s_2 \to s_5 .\ y\, x : (s_2 \to s_5) \to s_5$



$$③ \quad = \{z : Nat\} \rhd [(\lambda y : s_2 \to s_5 .\ y\,x) \mid x \leftarrow 0 :: z :: [\,]_{Nat}] : [(Nat \to s_5) \to s_5]$$



$\tau_v = [Nat]$

$S = MGU\{[Nat] \doteq [s_2]\} = \{s_2 \leftarrow Nat\}$